

CLAIMS

[1] A parking brake system comprising: a parking piston (44) slidably fitted into a casing (23) so that a parking brake state can be obtained by forward movement in response to a parking control fluid pressure acting on a rear face side of the parking piston (44); a lock mechanism (31) provided within the casing (23) to the rear of the parking piston (44) so as to automatically lock in response to forward movement of the parking piston (44) in order to mechanically lock the parking piston (44) at a forward position and unlock in response to a parking release control fluid pressure acting on the lock mechanism (31); a fluid pressure source (10A, 10B, M); and fluid pressure control means (105A, 105B) for controlling a fluid pressure generated by the fluid pressure source (10A, 10B, M) so that the parking control fluid pressure and the parking release control fluid pressure can be obtained; the lock mechanism (31) comprising a lock piston (56) that is slidably fitted into the casing (23) to the rear of the parking piston (44) so that at least when the parking piston (44) moves forward a forward urging force acts on the lock piston (56) and that is arranged such that a parking release control pressure can act on the lock piston (56) toward the rear, a cylindrical retaining tube (57) that is integrally and coaxially connected to a rear part of the parking piston (44), spheres (58) that are retained at a plurality of positions in the peripheral direction of the retaining tube (57) so as to be movable in a direction along the radial direction of the retaining tube (57), and an insertion shaft (59) that is connected integrally to the front end of the lock piston (56) so as to be axially relatively movably inserted into the retaining tube (57) in order to sandwich the spheres (58) between the insertion shaft (59) and the inner face of the casing (23) while contacting the spheres (58) from the inside of the retaining tube (57); the casing (23) and the insertion shaft (59) being formed so as to position the spheres (58) radially inward when the parking piston (44) is at a retreat limit and position the spheres (58) radially outward when the lock piston (56) moves to a forward position in response to forward movement of the parking piston (44) from the retreat limit, a plurality of guide grooves (125) extending in the axial direction of the insertion shaft

(59) being provided on the outer face of the insertion shaft (59), the guide grooves (125) having a concavely curved cross-sectional shape with a diameter that is equal to or larger than the diameter of the spheres (58) so that part of each sphere (58) is rollably fitted into the guide groove (125), and the casing (23) having provided on the inner face a restricting step (42) that is capable of abutting, from the rear, against the spheres (58) pushed radially outward by the insertion shaft (59) when the lock piston (56) is at the forward position.